

1. A system for an AC electrical circuit, the system comprising:  
an actuator that converts current into a force to move contacts relative to one another  
to switch power on and off in the AC electrical circuit;  
a source that operates to supply current to the actuator; and  
5 an actuator control system connected to the actuator and to the source to control the  
current to the actuator;  
wherein the current to the actuator is independent of a voltage produced by the  
actuator during switching and a voltage at which the source operates.

10 2. The system of claim 1 further comprising an amplifier that controls the current  
from the source to the actuator.

3. The system of claim 2 further comprising a controller connected to the source  
and the amplifier, and configured to:  
15 sense voltage from the source, and  
provide information to the amplifier to control the current to the actuator.

4. The system of claim 1 in which the source operates at a voltage that is greater  
than the voltage produced by the actuator during switching.

20 5. The system of claim 1 in which the actuator converts the current into the force  
to move the contacts in a linear direction relative to one another.

25 6. The system of claim 1 in which the actuator switches power on and off in the  
AC electrical circuit by moving at least one of the contacts away from the other contact.

7. The system of claim 1 in which the contacts are connected to the AC electrical  
circuit such that when the contacts touch, current flows through the AC electrical circuit.

30 8. The system of claim 1 in which the actuator control system comprises a  
controller that senses the voltage provided by the voltage source.

9. The system of claim 1 further comprising control circuitry connected to the contacts; in which control of the actuator current is based on information from the control circuitry.

5 10. A method for controlling an actuator connected to an AC electrical circuit to interrupt current, the actuator being configured to convert current into a force to move contacts relative to one another to switch power on and off in the AC electrical circuit, the method comprising:

supplying power to an actuator; and

10 controlling current to the actuator such that the current to the actuator is independent of a voltage produced by the actuator during switching and a voltage at which the power is supplied.

11. The method of claim 10 further comprising:

15 sensing the voltage at which power is supplied to the actuator, and providing information to control the current to the actuator.

12. The method of claim 10 in which the power is supplied at a voltage that is greater than the voltage produced by the actuator during switching.

20 13. The method of claim 10 in which the actuator switches power on and off in the AC electrical circuit by moving at least one of the contacts away from the other contact.

25 14. The method of claim 10 in which the contacts are connected to the AC electrical circuit such that when the contacts touch, current flows through the AC electrical circuit.

15. The method of claim 10 further comprising sensing the voltage at which power is supplied to the actuator.

30 16. The method of claim 10 in which control of the actuator current is based on information from the control circuitry.

17. The method of claim 10 in which the actuator converts the current into the force to move the contacts in a linear direction relative to one another.

5 18. An actuator control system for an AC electrical circuit, the actuator control system comprising:

an actuator interface that connects to an actuator that converts current into a force move contacts relative to one another to switch power on and off in the AC electrical circuit;

10 an input interface that connects to a source that operates to supply current to the actuator; and

a controller connected to the actuator interface and to the input interface to control the current to the actuator such that the current to the actuator is independent of a voltage produced by the actuator during switching and a voltage at which the source operates.

15 19. The system of claim 18 further comprising an amplifier that controls the current from the source to the actuator.

20 20. The system of claim 19 in which the controller is configured to:  
sense voltage from the source, and  
provide information to the amplifier to control the current to the actuator.

21. The system of claim 18 in which the source operates at a voltage that is greater than the voltage produced by the actuator during switching.

25 22. The system of claim 18 in which the actuator switches power on and off in the AC electrical circuit by moving at least one of the contacts away from the other contact.

30 23. The system of claim 18 in which the contacts are connected to the AC electrical circuit such that when the contacts touch, current flows through the AC electrical circuit.

24. The system of claim 18 in which the controller senses the voltage provided by the source.

5 25. The system of claim 18 in which the actuator control system is connected to control circuitry that is connected to the contacts; in which control of the actuator current is based on information from the control circuitry.